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# CREATININE AND GLOMERULAR FILTRATION RATE ESTIMATED USING IT IN PATIENTS WITH VARIOUS SEVERITY LEVELS OF COVID-19

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**Introduction.** Although most patients who have had COVID-19 recover and return to their initial state, some of them still have persistent health problems, and this process is called acute post-COVID condition or prolonged COVID. The World Health Organization defines long COVID as the continuation of disease symptoms for three months or more after the initial infection and the occurrence of new symptoms in the absence of other causes. The opinion of experts from the aforementioned reputable organization has been confirmed by a number of other observations.

Sometimes persistent symptoms can be observed even after a minimally symptomatic infection. Fatigue, shortness of breath, chest tightness, cough, arthralgia, headache, and cognitive dysfunction belong to this group of symptoms. According to observers, long COVID is observed in 10-30% of patients and lasts for more than a year.

**Objective of the study.** To assess the functional state of the kidneys based on the results of laboratory and instrumental studies conducted during the acute period of the disease in 400 patients with COVID-19 without comorbidities.

**Materials and methods.** The research source comprised 400 patients (aged 20-45 years, 200 men and 200 women) without comorbid diseases who were treated for COVID-19 and subsequently observed at the Bukhara Regional Infectious Diseases Center and the Bukhara Regional Multidisciplinary Medical Center of the Republic of Uzbekistan. A retrospective analysis of laboratory and instrumental examinations and complex treatments conducted during the acute phase of the disease was performed, and based on the obtained results, the functional state of the kidneys was assessed. Patients were divided into 3 groups (mild, moderate, and severe) according to the clinical course of COVID-19 and were studied comparatively. In the acute period of COVID-19, the complaints and medical history of 400 patients were studied, and the results of general urinalysis, complete blood count, biochemical and blood coagulation tests, coagulogram, and computed tomography (CT) findings were analyzed. The estimated glomerular filtration rate (eGFR) was determined based on the identified creatinine levels.

**Results.** The average age of the observed patients in the groups was 32.7±2.15, 34.7±2.05, and 34.5±2.9 years, respectively, with no significant difference noted between them ($p>0.05$).

In patients with mild COVID-19, the average serum creatinine level was 72±2.4 µmol/l, while in those with moderate severity it was 84±3.5 µmol/l. When comparing the indicators between these two groups, a statistically significant difference was observed ($p<0.01$). In the third group, the creatinine level was 98±4.6 µmol/l. When comparing the results obtained in this group with the indicators of mild and severe forms of the disease, a highly significant difference ($p<0.001$) was revealed.

Creatinine-based eGFR in patients with mild, moderate, and severe disease per 1.73 $m^2$ body surface area was 116±5.2 ml/min, 104±4.8 ml/min, and 89±4.7 ml/min, respectively. A comparative analysis of the obtained results revealed a significant difference ($p<0.05$) between the first and second groups, and a highly significant difference ($p<0.001$) between the first and third groups. No significant differences in eGFR indicators were noted between the second and third groups.

**Conclusion.** The obtained results confirm the important practical significance of monitoring the functional state of the kidneys in patients with severe COVID-19 infection.